



PATENT APPLICATION

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re application of

Docket No. A8487

NAKAMURA, Lee E., et al.

Appln. No. 09/637,381

Group Art Unit: 2177

Confirmation No. 8892

Examiner: Harold E. Dodds

Filed: August 11, 2000

For: DATA ACCESS SYSTEM

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**REPLY BRIEF PURSUANT TO 37 C.F.R. § 1.193(b)**

**MAIL STOP APPEAL BRIEF - PATENTS**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

**INTRODUCTION**

In accordance with the provisions of 37 C.F.R. § 1.193(b), Appellants respectfully submit this Reply Brief in response to the Examiner's Answer dated May 17, 2004. Entry of this Reply Brief is respectfully requested.

**SUPPLEMENTAL INFORMATION**

Appellants respectfully provide the following recently acquired information to supplement the *Section II. Related Appeals And Interferences* section of Appellants' Appeal Brief filed on March 8, 2004:

REPLY BRIEF UNDER 37 C.F.R. § 1.193(b)  
U.S. Application No. 09/637,381  
Attorney Docket No. A8487 / ST9-99-124

In related Application No. 10/145,542, Appellants filed a Notice of Appeal on May 5, 2004 and an Appeal Brief on July 1, 2004, to appeal the final rejection of claims 61-81 in the Office Action dated February 6, 2004.

### **POINTS RAISED IN EXAMINER'S ANSWER**

Although the present application is one of several related applications on appeal and being handled by the Examiner, the Examiner nevertheless raises numerous new points of argument in his Answer (*see* Examiner's Answer: pages 11-23). Appellants respectfully submit that an Examiner's Answer is not the proper means, nor is this the proper time, for advancing new arguments and theories with respect to the appealed claims. Instead, the Examiner should reopen prosecution if he feels that the grounds of rejection being appealed are deficient in any regard.

Appellants address the Examiner's new assertions by their paragraph number in the Examiner's Answer, as follows.

#### **(11.1) and (11.2)**

In rejecting each of the independent claims under 35 U.S.C. § 103, the Examiner asserts for the first time, in numbered paragraph 11.1 of the Examiner's Answer, without support in discussing the Pereira reference, that "the only requirement as to what data is stored in a database table is that the types of data stored correspond to the types of data that are allowed in specified fields in tables" (Examiner's Answer: page 11). Furthermore, in numbered paragraph 11.2 of the Examiner's Answer, the Examiner asserts that Appellants are making an assumption that "information for a mapping table stored in a database will be different than information for a

mapping table stored in memory” (*Id.*). According to the Examiner, it is more likely that the information is the same regardless of where it is stored (*Id.*). Thus, the Examiner jumps to the conclusion that “it is reasonable to conclude that the same information in the same formats may be stored either in a database or in memory” without this assertion being found or even suggested in the prior art (*Id.*).

As an initial matter, Appellants submit that the proper focus is the prior art’s disclosure of how the data is organized and stored.

Claim 1 recites “creating a persistent in-memory database table” and “loading data into the in-memory database table” (*see also* claims 9 and 17). Thus, claim 1 requires, *inter alia*, that the data be organized and stored as an in-memory database table.

Pereira, which is the primary reference in the rejection of claims 1, 9 and 17, describes reorganizing database tables (*e.g.*, which have become fragmented), wherein the reorganization process uses a mapping table mechanism that Pereira discloses could be stored in memory and that contains pointers to database rows that are being reorganized (Pereira: Abstract; and col. 3, lines 14-33). Thus, Pereira merely discloses a table data structure that can be stored in memory and neither teaches nor suggests that a database table is stored in memory.

The mapping table is created to map rowids of the source table to rowids of the rows inserted into the new table (Pereira: col. 8, lines 50-57). Once the reorganization is complete, the new table becomes the source table and the original source table is dropped (Pereira: Abstract). Thus, the mapping table is a temporary product of the reorganization process and does not even contain the data being reorganized but instead contains only pointers to database rows.

Furthermore, claim 1 requires that the in-memory database table is stored as a persistent in-memory database table (*see also* claims 9 and 17). In other words, an in-memory database table is a database table that persistently resides within memory.

Conversely, Pereira merely discloses various alternative storage media for storing the mapping table that is used during a reorganization process of DBMS tables. Specifically, Pereira simply states that “the mapping table can be stored [1] in the form of a table in the DBMS, [2] in memory, [3] on a file system, or [4] any other method in which the mapping table may be maintained and later used by the reorganization process” (Pereira: col. 9, lines 62-66, emphasis added). Pereira fails to teach or even suggest that a mapping table is a database table, that it is stored in memory, and that it persists in memory, as required by the claims.

**(11.3)**

In rejecting each of the independent claims under 35 U.S.C. § 103, the Examiner also asserts, in numbered paragraph 11.3 of the Examiner’s Answer, without support, that “when a database table is defined, the definition applies to both the portion stored on disk and the portion stored in memory” (Examiner’s Answer: page 12). The Examiner alleges that a database table stored solely on disk would be unworkable because inserts, deletes and modifications of individual rows could not be made, without providing any rationale for this conclusion (*Id.*).

Furthermore, the Examiner asserts, for the first time, that during an operating session, a portion of the table is in memory where it can easily accommodate the inserts, deletes and modifications of individual rows and at specified times during the processing, the portion of the database in memory is written back to disk (*Id.*). Appellants’ respectfully submit that the

Examiner does not appear to be describing any of the references cited in support of the current grounds of rejection. For example, Pereira does not describe accommodating inserts, deletes and modification of individual rows of the mapping table.

Furthermore, the Examiner appears to be missing the point since claim 1 requires that the database table be persistently located in memory (*see also* claims 9 and 17). Conversely, the exchange of data between memory and some other secondary storage (*e.g.*, a disk drive) is known in the art and suffers from various problems, such as relatively long retrieval times (Appellants' specification: page 2, line 24 to page 3, line 23).

**(11.4)**

In rejecting each of the independent claims under 35 U.S.C. § 103, the Examiner also asserts, in numbered paragraph 11.4 of the Examiner's Answer, without support, that "a table that may be stored in the DBMS is clearly a database table" and that Pereira discloses an in-memory table by describing a table that may be stored in memory (Examiner's Answer: page 13). The Examiner then jumps to the conclusion that "since the mapping table [of Pereira] is both a database table and an in-memory table, it qualifies as an in-memory database table" (*Id.*). Appellants submit that both the Examiner's premise and his conclusion are incorrect.

The Examiner asserts that Pereira discloses a mapping table that is both a database table and at the same time an in-memory table. To the contrary, as noted above, Pereira merely discloses various alternative storage media for storing a mapping table, not DBMS tables, that is used during a reorganization process of the DBMS tables. Specifically, as noted above, Pereira merely states that "the mapping table can be stored [1] in the form of a table in the DBMS, [2] in

memory, [3] on a file system, or [4] any other method in which the mapping table may be maintained and later used by the reorganization process” (Pereira: col. 9, lines 62-66, emphasis added). Pereira fails to teach or suggest that a mapping table is a database table, that it is stored in memory, and that it is persistent.

**(11.5)**

In rejecting each of the independent claims under 35 U.S.C. § 103, the Examiner also asserts, in numbered paragraph 11.5 of the Examiner’s Answer, that “permanent memory is persistent memory” (Examiner’s Answer: pages 13-14). The Examiner then alleges that Pereira teaches the use of persistent memory by disclosing that “...a system checkpoint assures that all dirty blocks are written to a persistent storage (disk)...” (*citing* Pereira: col. 12, lines 9-10). The Examiner’s position is inconsistent with Pereira, because Pereira expressly states that it is referring to disk storage when describing persistent storage (Pereira: col. 12, lines 9-10).

Additionally, the Examiner alleges that this flawed definition of “persistent memory”, as allegedly provided by Pereira, is consistent with the recognized definition of persistent memory at the time of the invention (Examiner’s Answer: page 14). The Examiner then provides a definition of “persistent data” (*Id.*). Applicants point out that the claims recite “a persistent in-memory database” and do not recite “persistent data.” Consequently, the Examiner’s definition of “persistent data” is irrelevant.

**(11.6)**

In rejecting each of the independent claims under 35 U.S.C. § 103, the Examiner also asserts, in numbered paragraph 11.6 of the Examiner’s Answer, that Carper teaches the use of

persistent tables stored in memory by disclosing that a command table in memory can be persistent (*citing* Carper: col. 14, lines 60-64; *see also* Carper: col. 14, lines 34-44) (Examiner's Answer: page 14).

To the contrary, the command table of Carper, like the mapping table of Pereira, is not a database table. Instead, the command table serves to identify commands executable by a new application installed on a smart card (Carper: col. 14, lines 34-44). Thus, when a command is received in the operating system, the operating system uses the command table(s) stored in memory in an attempt to identify an application able to execute the command (*Id.*).

**(11.7)**

In rejecting each of the independent claims under 35 U.S.C. § 103, the Examiner also asserts, in numbered paragraph 11.7 of the Examiner's Answer, without support, that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Pereira and Carper in order to persistently store tables in memory in order to have rapid access to the data in these tables (Examiner's Answer: page 15). In particular, the Examiner alleges that database tables stored only on disk would be unworkable because inserts, deletes and modifications of individual rows could not be made and input/output access to memory is much faster than access to disks (*Id.*).

Appellants respectfully submit that the Examiner fails to establish a *prima facie* case of obvious for combining Pereira and Carper in the manner proposed. For example, it appears that the Examiner is applying impermissible hindsight in asserting that the suggestion/motivation for combining the references is to have rapid access to the data in these tables. Neither Pereira nor

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Carper (alone or in combination) teaches or suggests creating a persistent in-memory database table in order to have rapid access to the data located therein.

As noted above, Pereira relates to reorganizing active DBMS tables, while the tables being organized are available for normal activity (Pereira: Abstract). Disparately, Carper relates to having a true operating system (OS) on a smart card that facilitates the installation/de-installation of applications on/from the smart card (Carper: Abstract). The Examiner provides no reasonable rationale as to why one of ordinary skill in the art would have been motivated to combine Pereira and Carper in the manner proposed.

Furthermore, the Examiner provides no support for his assertion that database tables stored only on disk would be unworkable because inserts, deletes and modifications of individual rows could not be made.

For at least the additional reasons set forth above in sections (11.1) to (11.7), the Board should reverse the rejections of claims 1, 9 and 17 (as well as their dependent claims) since Pereira does not teach or suggest, alone or in combination with the other cited references, a persistent in-memory database table.

**(11.8) to (11.13)**

Since the additional points raised in sections (11.8) to (11.13) of the Examiner's Answer are predicated on the flawed premise that independent claims 1, 9 and 17 are rendered obvious by the combination of Pereira and Carper, these points are not further addressed given Appellants' remarks set forth herein.



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**CONCLUSION**

For the above reasons as well as the reasons set forth in Appellants' Brief on Appeal, Appellants respectfully request that the Board reverse the Examiner's rejections of all claims on Appeal. An early and favorable decision on the merits of this Appeal is respectfully requested.

Respectfully submitted,

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